SSL IN PRACTICE

EDWARD CLARK

ZGF
ZIMMER GUNSUL FRASCA ARCHITECTS LLP

SSL DESIGN CHALLENGES

REPAIR AND MAINTENANCE

GENERATIONAL CONSISTENCY (INCONSISTENCY)

DRIVERS

DALI

KNX®

MP BUS®
TECHNOLOGY BY BELIMO

flexROOM®

ASHRAE BACnet™

enocean®

M-Bus

DMX

CONTROLS CONSISTENCY (INCONSISTENCY)

Indy™ LED Architectural Lighting

ChromaControl

Color Tuning • CCT Control • Black Body Dimming

4", 6", 8" Downlight, Adjustable, Cylinder or Wall Wash

New Construction

Remodel

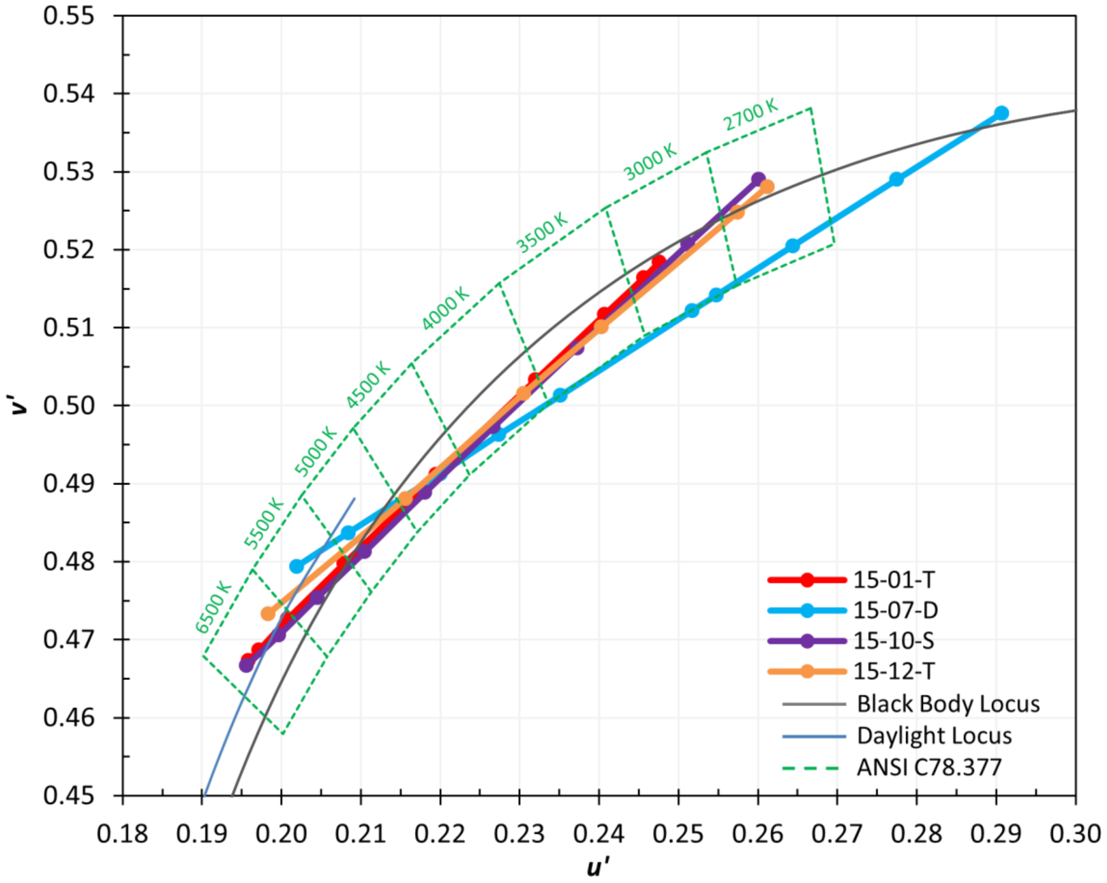
Cylinder

Adjustable

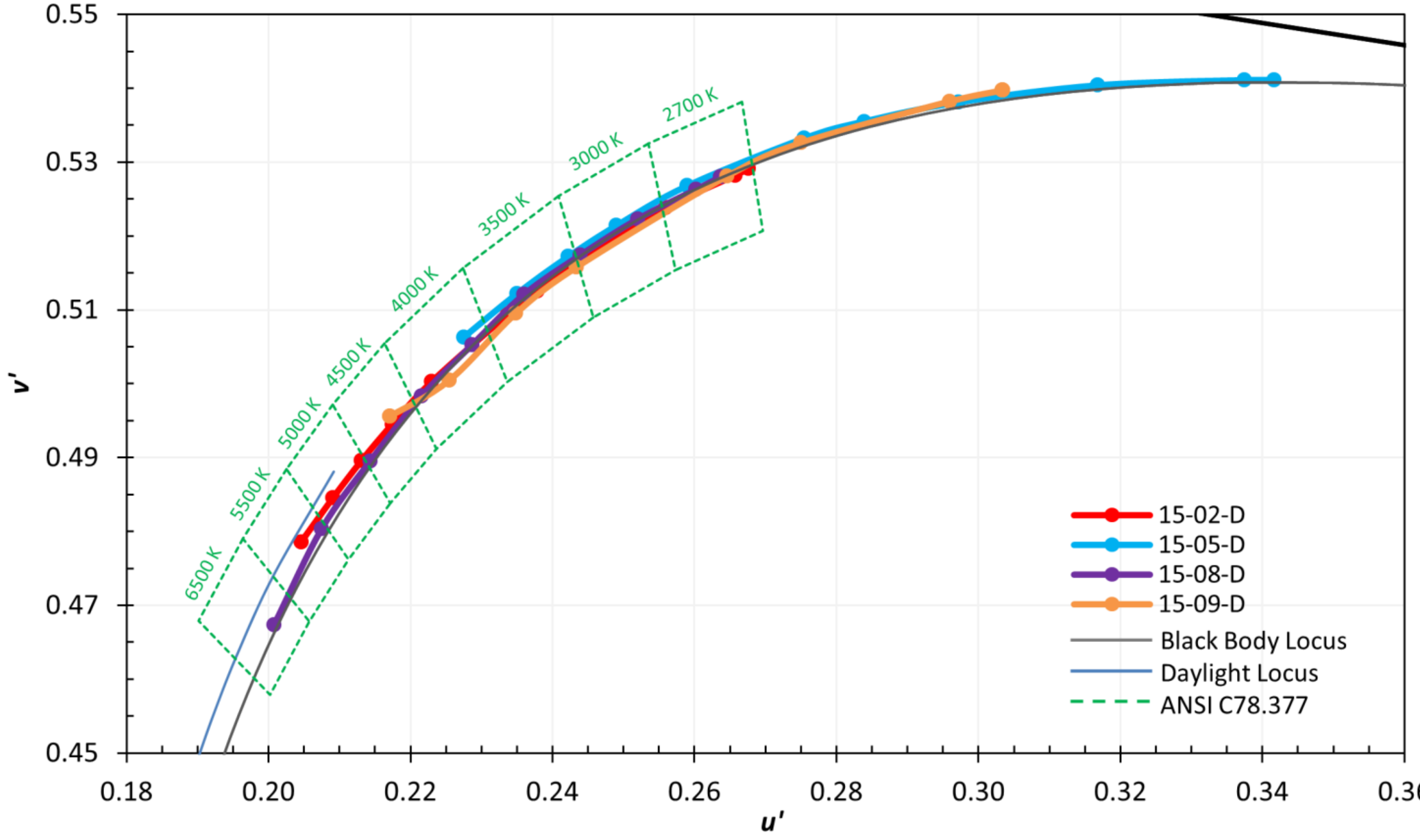
Retrofit

JUNO - INDY

LINEAR TUNING

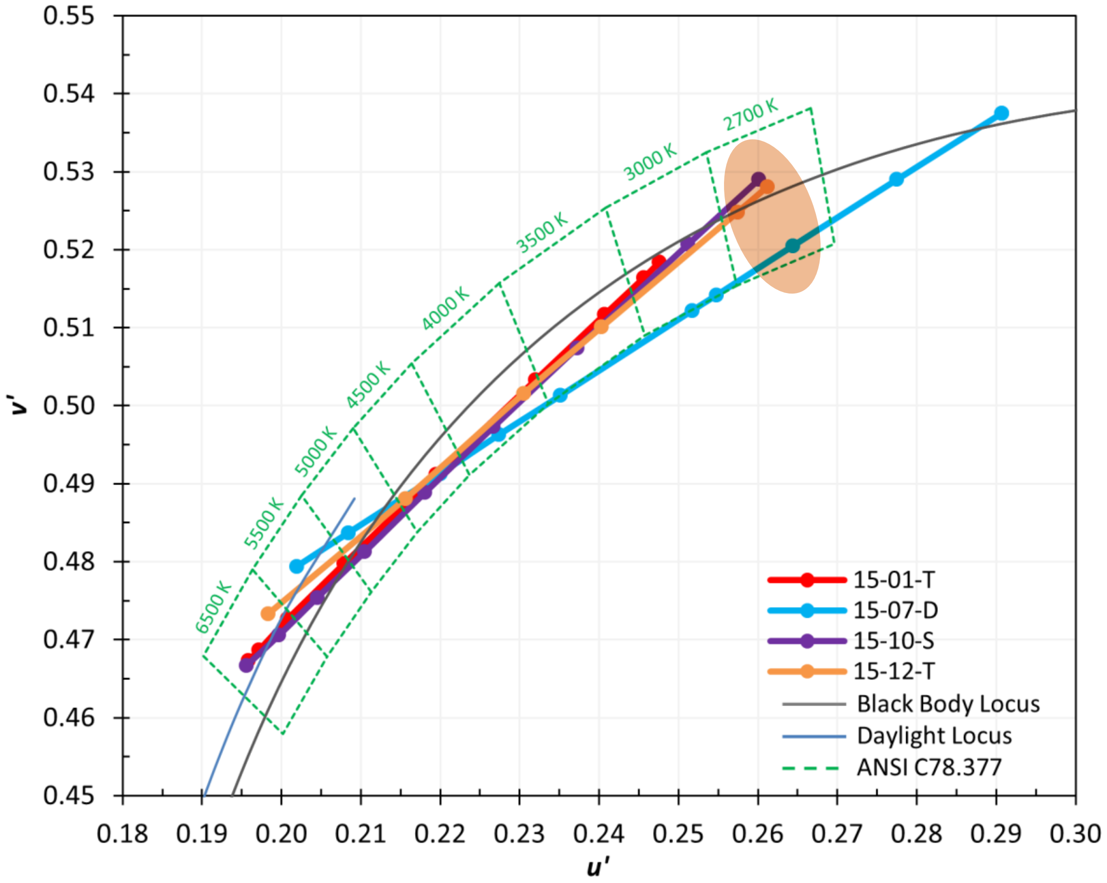


NON-LINEAR TUNING

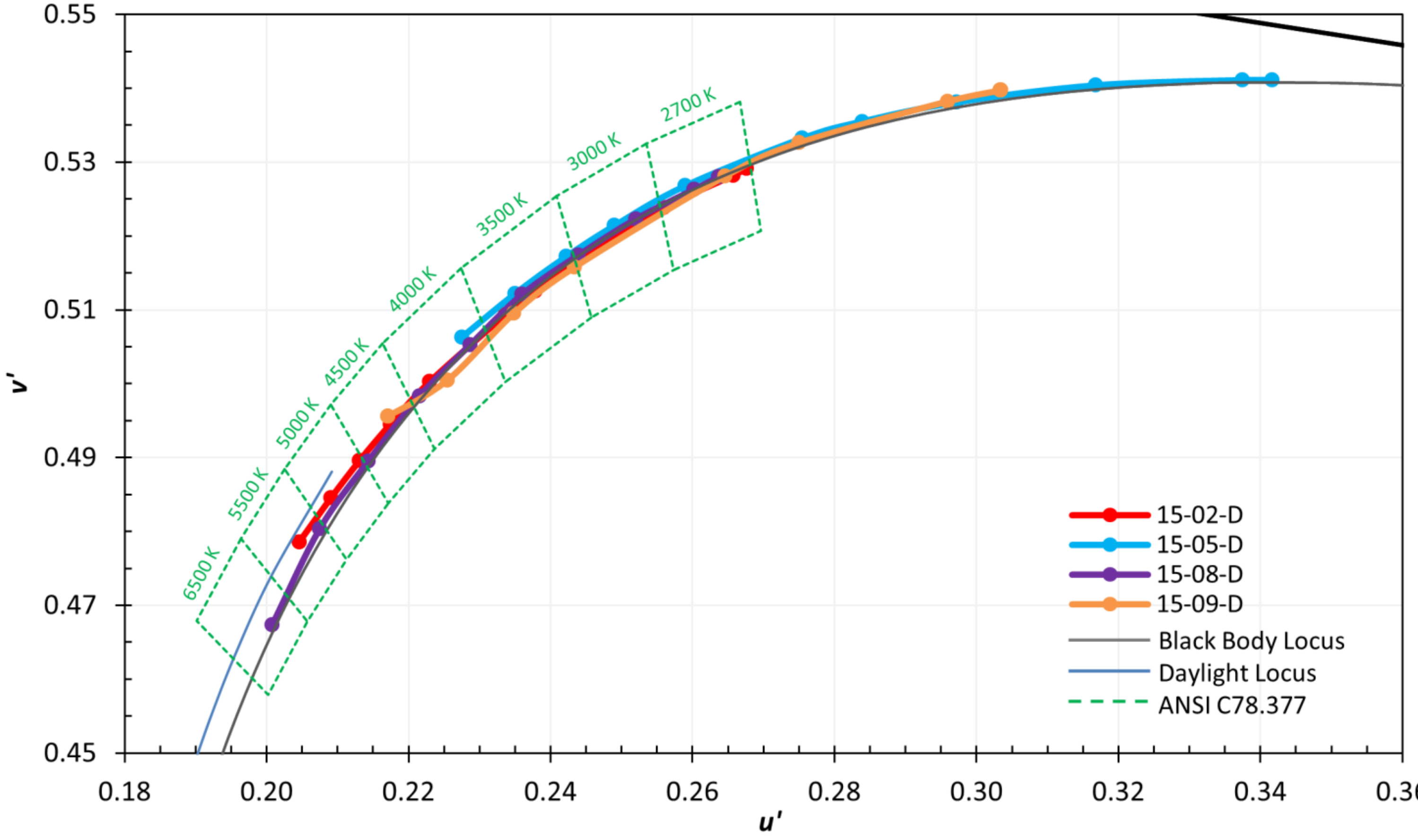


CORRELATING COLOR NOT JUST TEMPERATURE

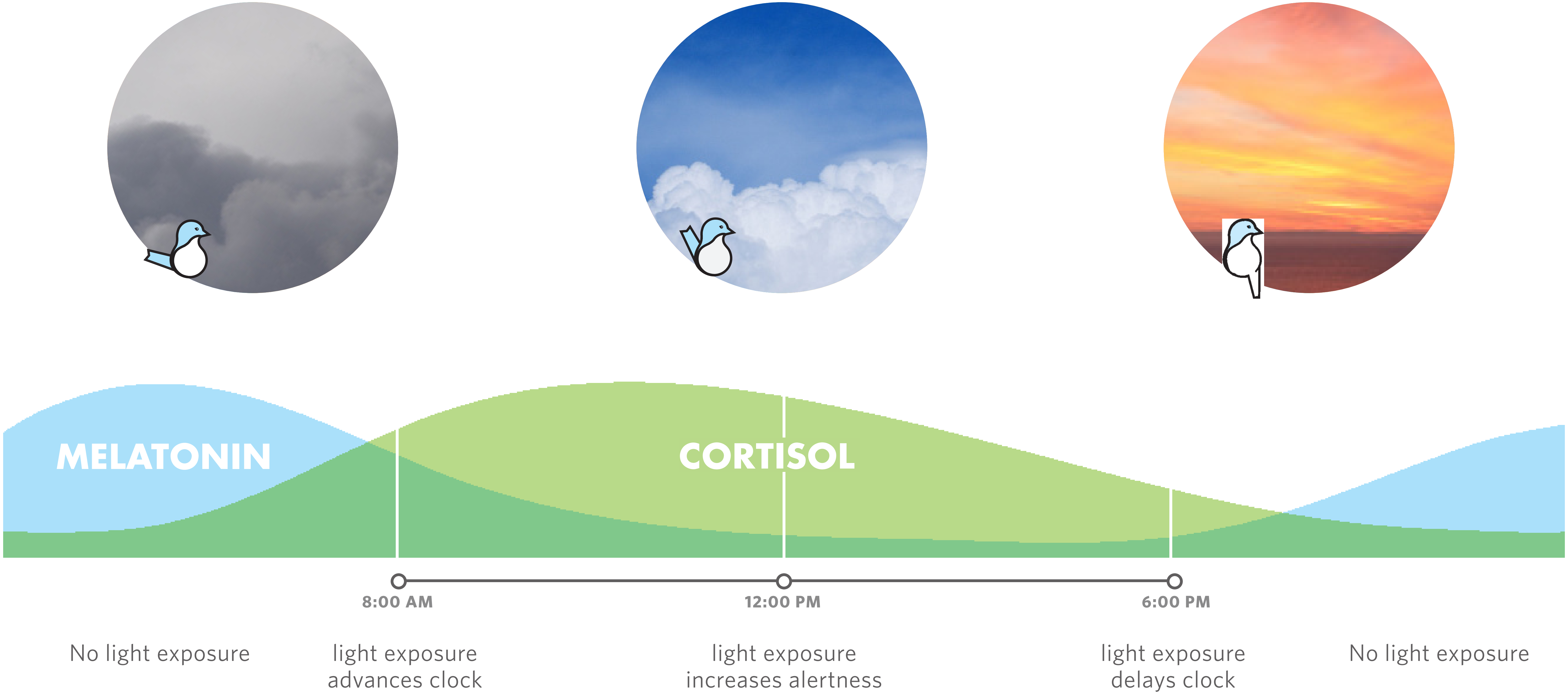
LINEAR TUNING



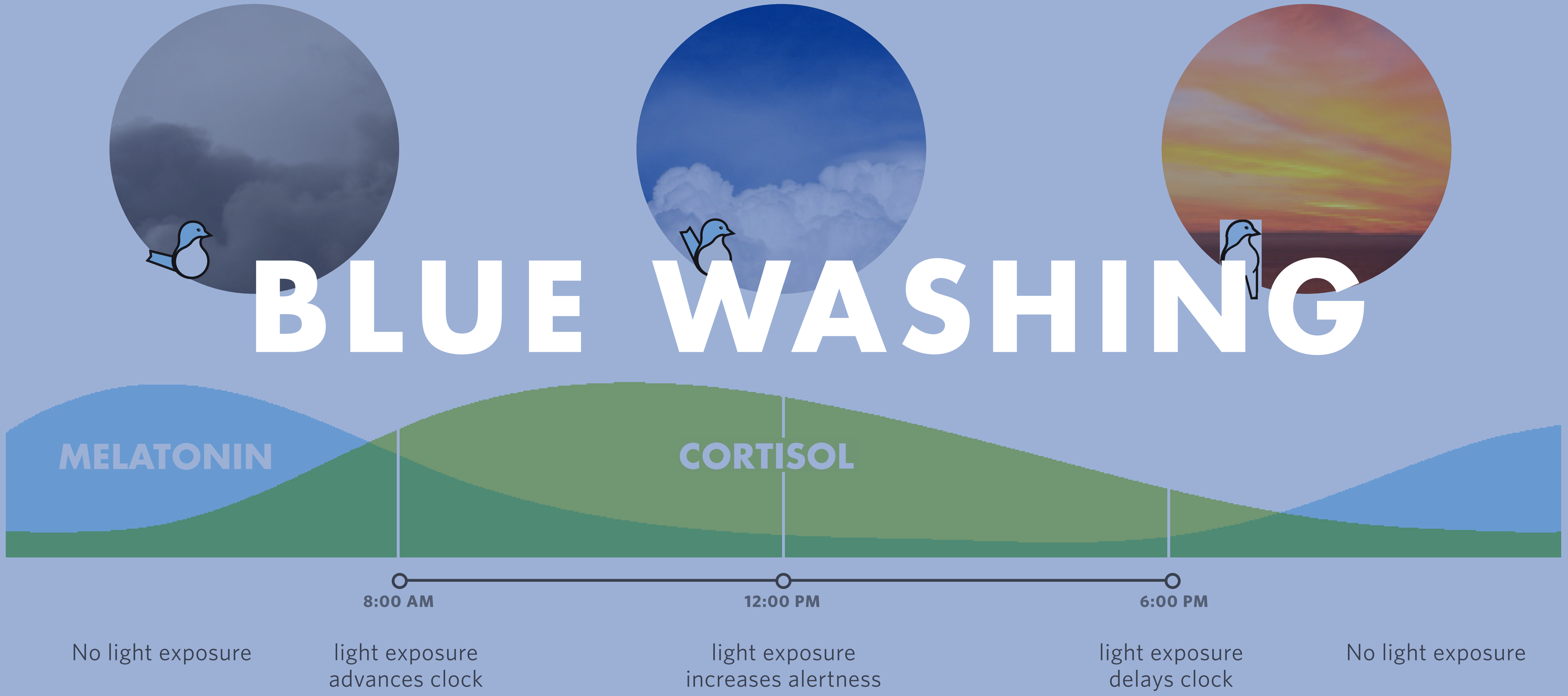
NON-LINEAR TUNING



CORRELATING COLOR NOT JUST TEMPERATURE


MELATONIN
CORTISOL
8:00 AM
12:00 PM
6:00 PM
No light exposure
light exposure
advances clock
light exposure
increases alertness
light exposure
delays clock
No light exposure

BLUE WASHING



3.2 IDENTIFICATION

A. Comply with requirements in Section 260553 "Identification for Electrical Systems" for identifying components and power and control wiring.

B. Label each dimmer module with a unique designation.

C. Label each scene control button with approved scene description.

3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

B. Perform the following tests and inspections with the assistance of a factory-authorized service representative:

1. Continuity tests of circuits.

2. Operational Test: Set and operate controls to demonstrate their functions and capabilities in a methodical sequence that cues and reproduces actual operating functions.
   a. Include testing of modular dimming control equipment under conditions that simulate actual operational conditions. Record control settings, operations, cues, and functional observations.

C. Remove and replace malfunctioning modular dimming control components and retest as specified above.

D. Test Labeling: After satisfactory completion of tests and inspections, apply a label to tested components indicating test results, date, and responsible agency and representative.

E. Reports: Written reports of tests and observations. Record defective materials and workmanship and unsatisfactory test results. Record repairs and adjustments.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain modular dimming controls. Laptop portable computer shall be used in training.

B. Coordinate demonstration of products specified in this Section with demonstration requirements for low-voltage, programmable lighting control system specified in Section 260943.13 "Addressable-Fixture Lighting Controls" and Section 260943.23 "Relay-Based Lighting Controls."

C. Provide second commissioning and training visit by factory-authorized service representative 3 month post-occupancy to adjust system scene and fade controls and schedule.

USER COMMISSIONING GUIDE

NOTE: Contractor shall contact Owner and schedule a time that works with Clinical staff to review system scenes and time schedule at the following project intervals:

A. 1 week prior to occupancy for initial system programming.
B. 3 months post-occupancy for system adjustment.

Guide to be filled out by Clinical staff based on Department schedule.

FILL IN DATE OF ACTIVITY:

INITIAL COMMISSIONING: ____________ OR POST: ____________

CORRIDOR AND MAIN DINING ZONES (LEVEL 3 / LEVEL 4)

Description of Scene:	Time Range in a 24-hour day:	Percentage of Output (%):	Temp of Output (k):
Night:	______ to ______	25%	2400K
Dawn:	______ to ______	70%	3500K
Morning:	______ to ______	85%	5000K
Mid-Day:	______ to ______	95%	6000K
Afternoon:	______ to ______	75%	4200K
Evening:	______ to ______	70%	3500K
Sunset:	______ to ______	55%	2700K

Name of Clinical Staff: ____________

Date: ____________

Initial of Clinical Staff Acceptance: ____________

END OF SECTION

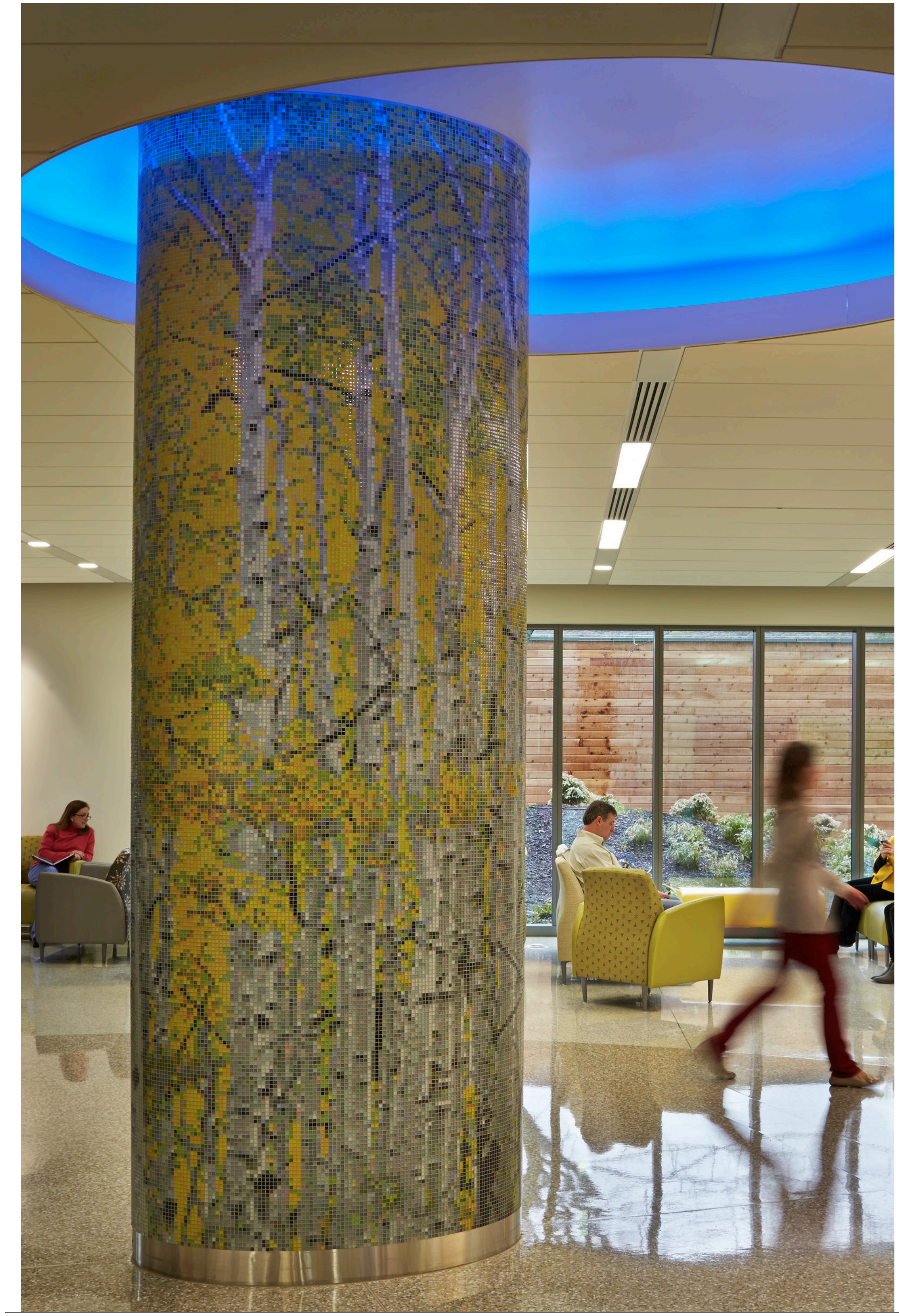
ROBUST SPECIFICATIONS - UNDERSTAND SCOPE

FEAR BASED PRICING

SSL DESIGN OPPORTUNITIES

LIBERATED FORM AND EXPANDABLE CAPACITY

LIBERATED FORM AND LOCATION



FUN, WHIMSY AND POSTITVE DISTRACTION

DOE SOLID STATE LIGHTING

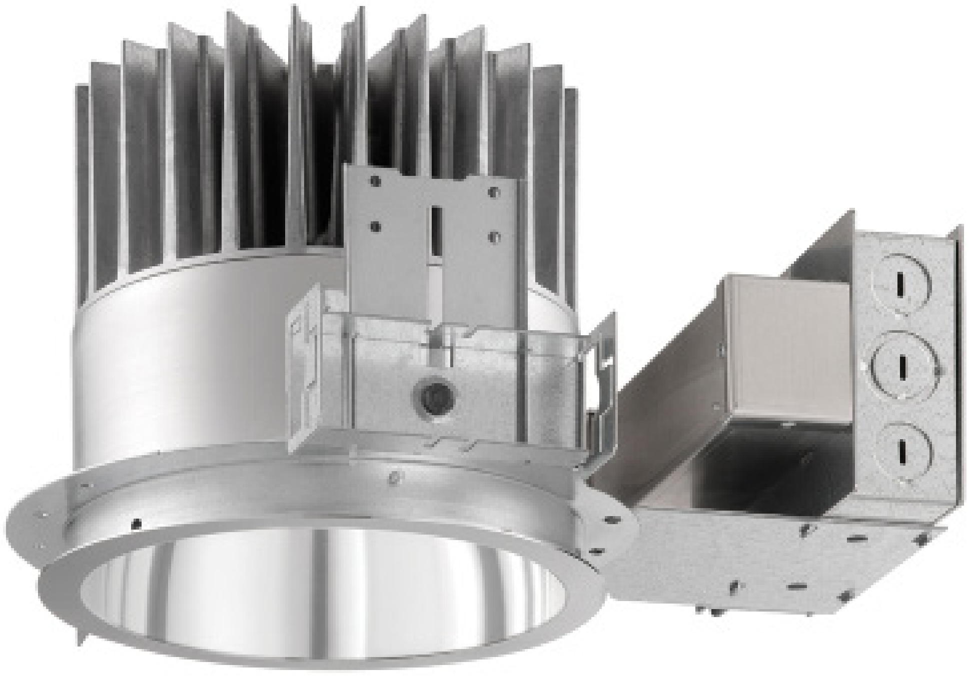
LESS IS MORE

ENGAGE OCCUPANTS

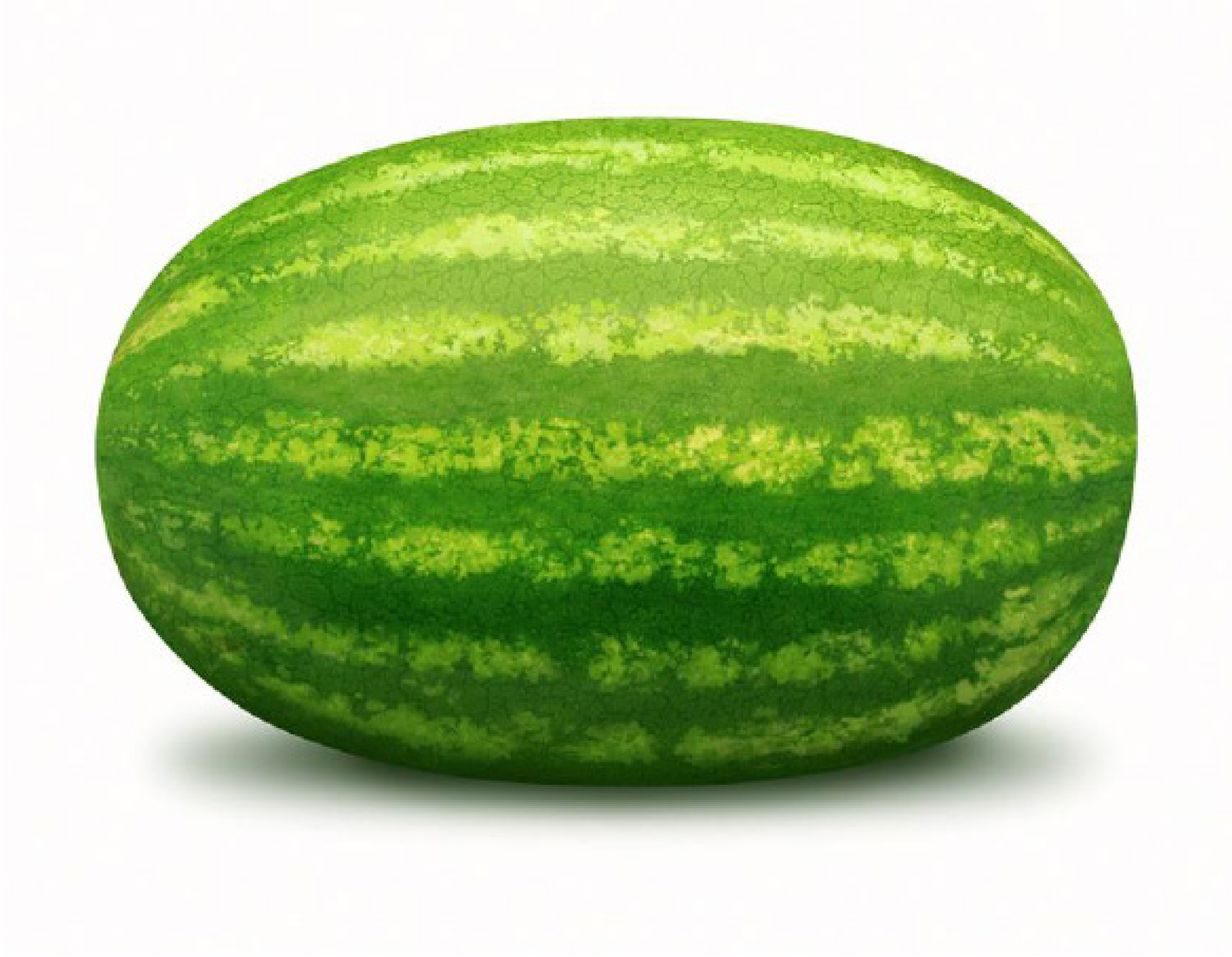
\$

VS

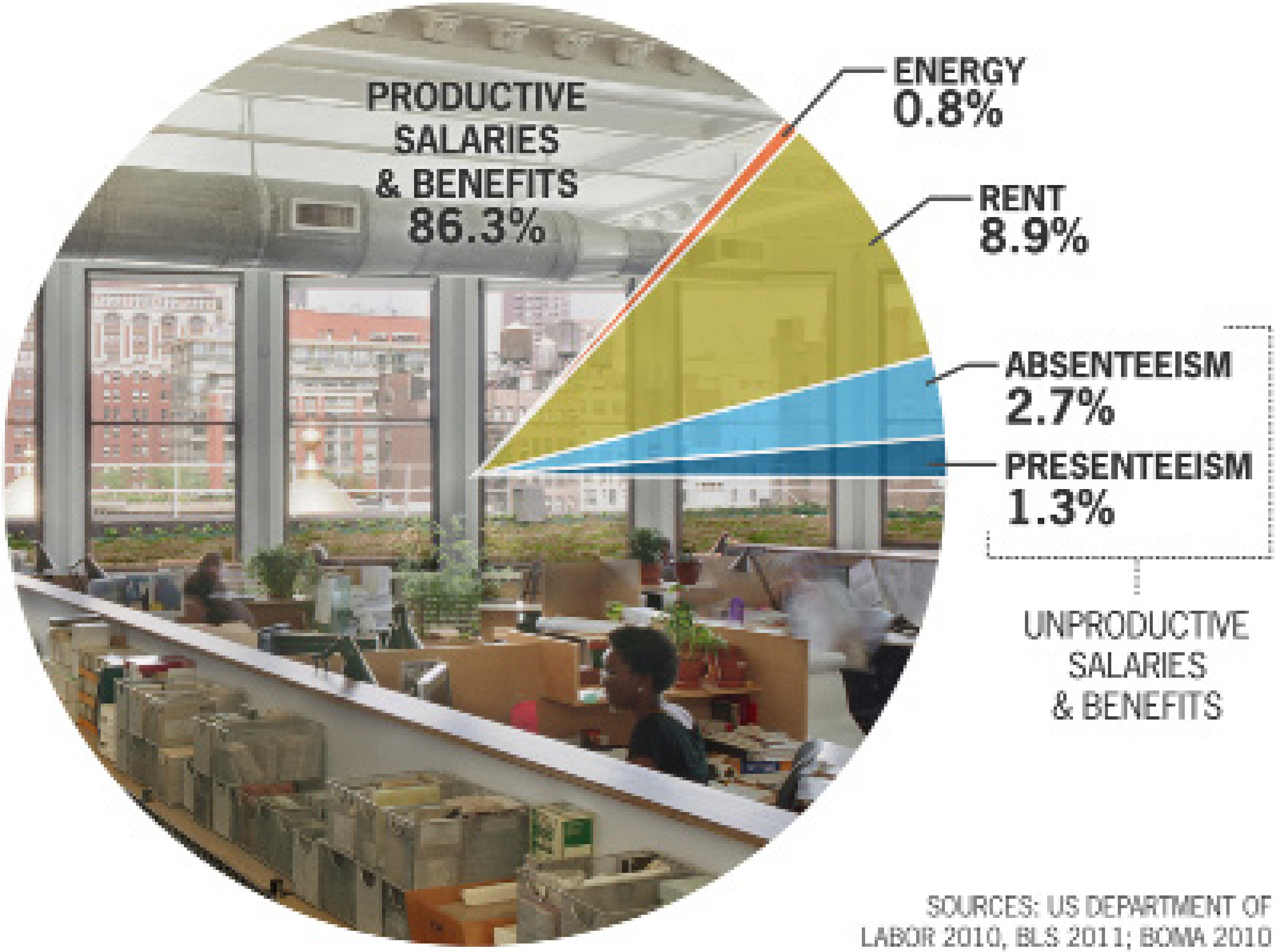
\$\$



VS

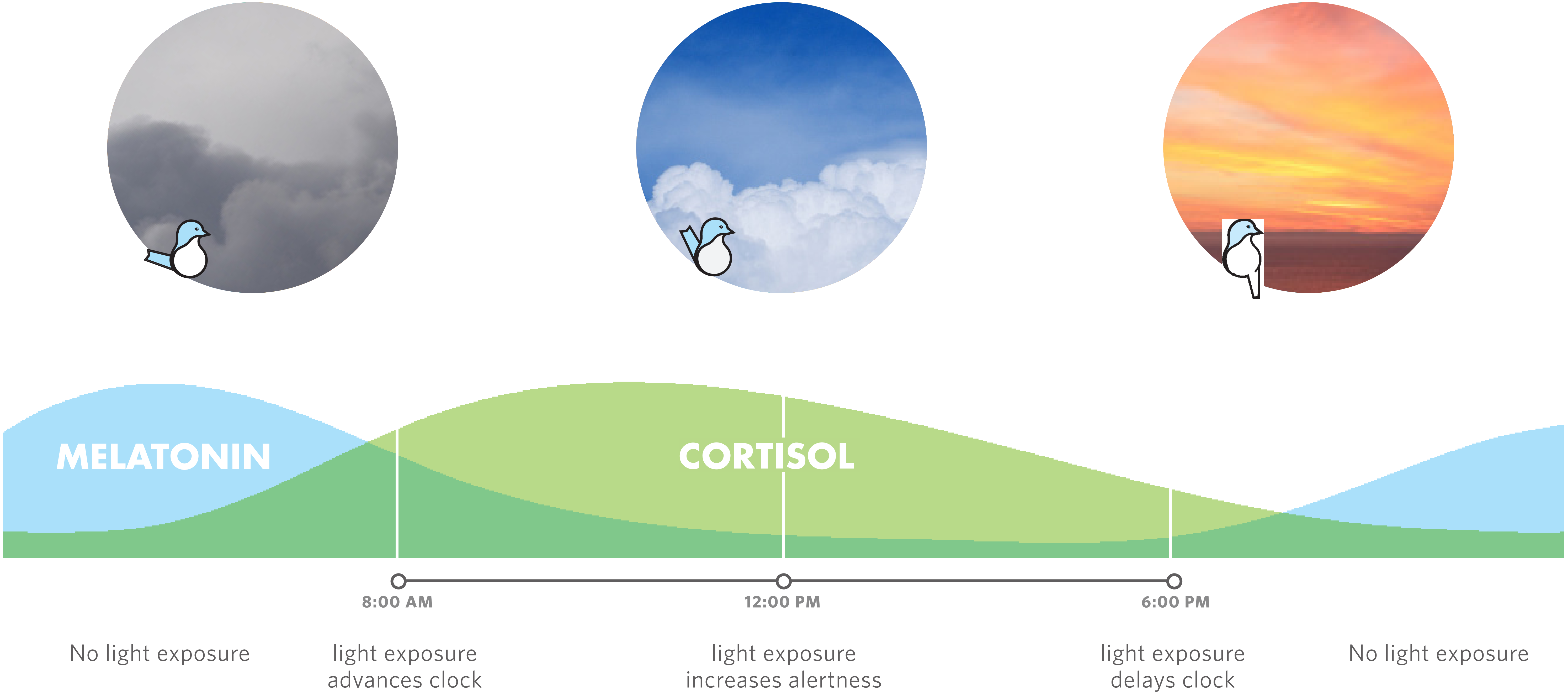


AFFORDABLE - COMPETITIVE

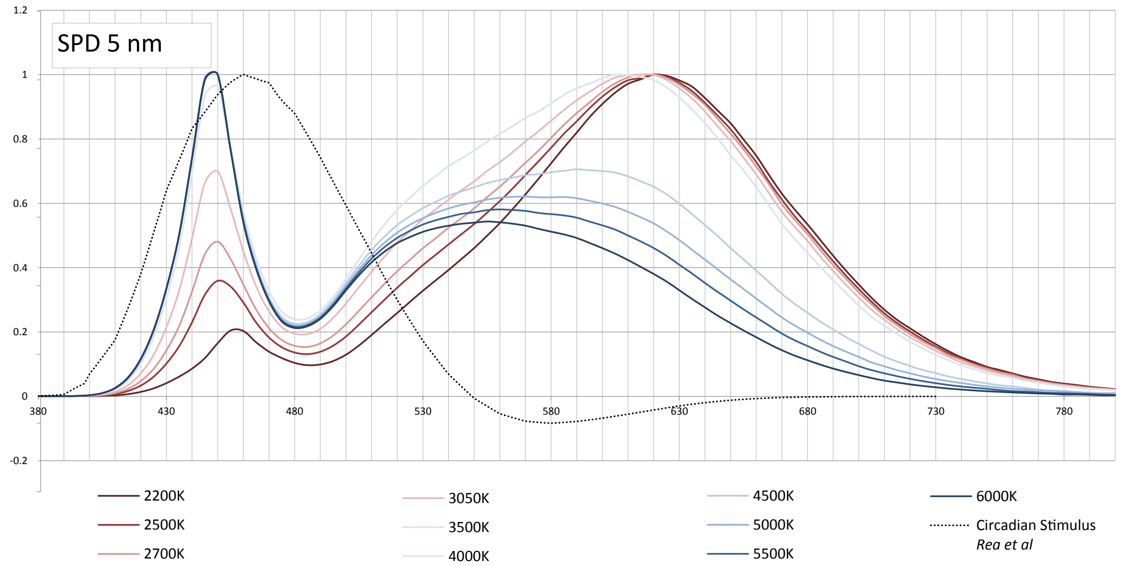


FROM THE ECONOMICS OF BIOPHILIA, TERRAPIN BRIGHT GREEN

AFFORDABLE - COMPETITIVE


MELATONIN
CORTISOL
8:00 AM
12:00 PM
6:00 PM
No light exposure
light exposure advances clock
light exposure increases alertness
light exposure delays clock
No light exposure

Spectral Power Distribution of BeveLED 2.0 at specified CCT

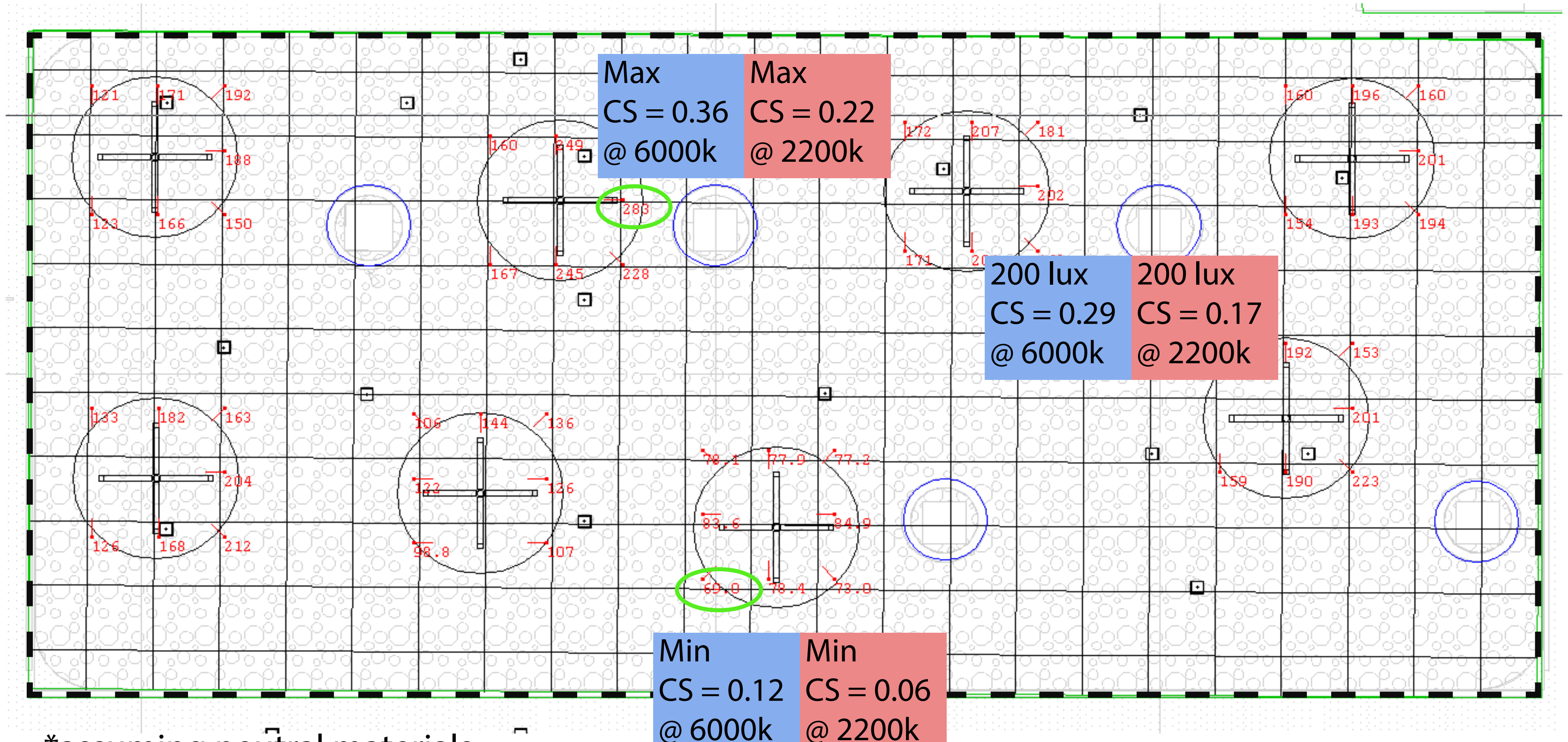


Vertical Illumination at the Eye - lux (z=42")

View vector

(Spectral qualites of tables need to be studied.)

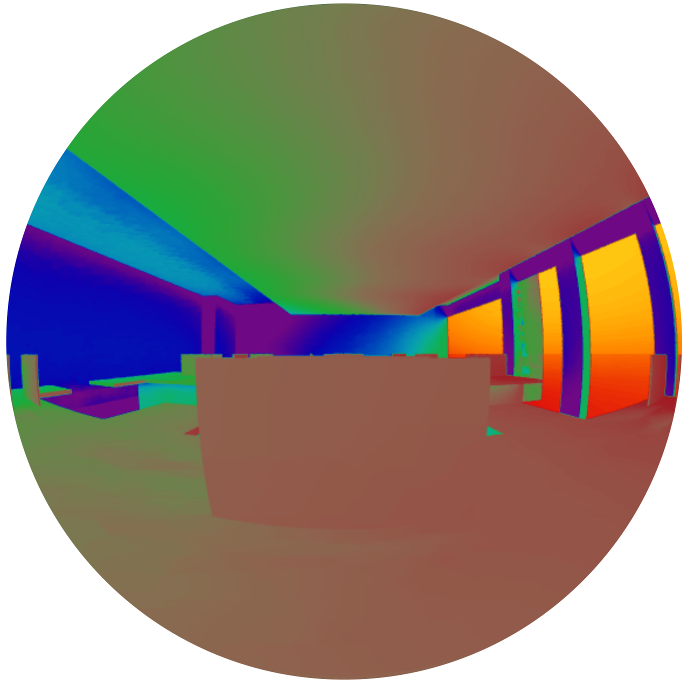
Threshold Response = 0.1- 0.2 CS
Circadian Shift = 0.3 - 0.4 CS
Circadian Saturation = 0.7 CS
Rea et al.

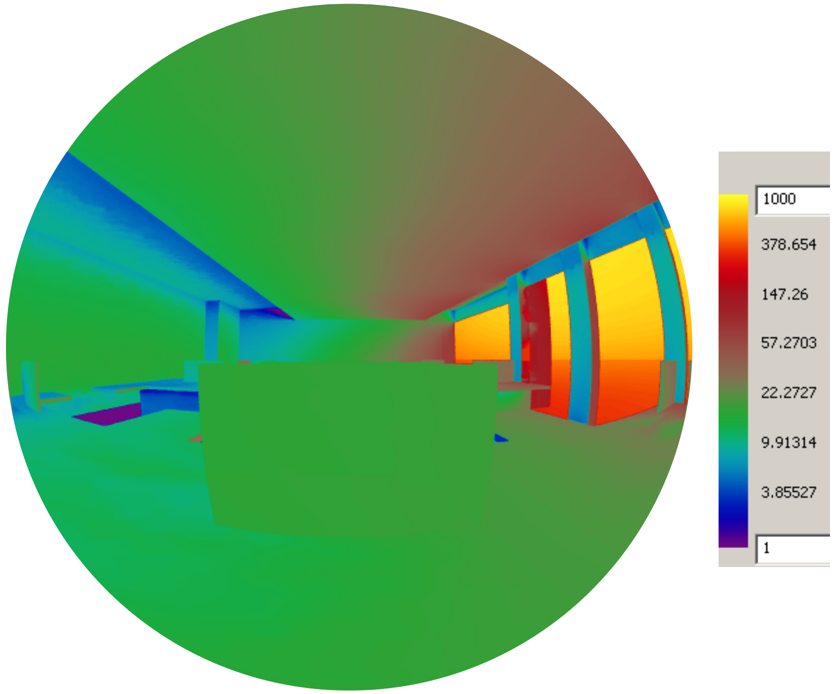


*assuming neutral materials

MARCH 21 . NOON . INTERMEDIATE SKY . 5000K

CIRCADIAN - LUCAS





LARK
SPECTRAL LIGHTING

HTTP://WWW.FOOD4RHINO.COM/PROJECT/LARK?UFH

THANK YOU

EDWARD CLARK
ed.clark@zgf.com